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**BUREAU OF
ENTOMOLOGY AND PLANT QUARANTINE
UNITED STATES
DEPARTMENT OF AGRICULTURE
AND
THE STATE ENTOMOLOGICAL
AGENCIES COOPERATING**

POPULATIONS OF CHINCH BUGS IN HIBERNATION
: NOVEMBER-DECEMBER, 1939

By the Division of Cereal and Forage Insect Investigations and
the Division of Domestic Plant Quarantines

Reports received from State entomological authorities and the staff of this Bureau late in the summer and in the fall of 1939 indicated that the chinch bug had become alarmingly abundant and was entering hibernation in great numbers in the North Central and in the southern Great Plains States. It was decided therefore to discuss plans for a cooperative survey to determine as exactly as possible the potential extent and density of the infestation as a basis of plans for a cooperative control campaign against the chinch bug should this become advisable in the spring of 1940.

A conference was called for this purpose at Des Moines, Iowa, on November 8, 1939. This was attended by representatives from State entomological agencies in Illinois, Iowa, Missouri, and Nebraska, as well as from the Federal Bureau of Entomology and Plant Quarantine, and resulted in plans for a cooperative survey to include all or parts of the following States: Illinois, Indiana, Iowa, Kansas, Missouri, Nebraska, Ohio, and Oklahoma. A uniform procedure of sampling was agreed upon along lines proposed by C. M. Packard, of this Bureau, and modified to conform with local conditions of hibernation where necessary in the various States concerned.

The sum of \$10,000 was allotted by the Secretary of Agriculture from the appropriation provided under the general authorization for the Control of Incipient and Emergency Outbreaks of Insect Pests and Diseases, to defray the expense of the proposed survey. It was conducted in close cooperation with the entomologists of the State experiment station and under the supervision of W. E. Dove, of the Bureau of Entomology and Plant Quarantine, with H. T. Rainwater as his assistant and Philip Luginbill and C. Benton as technical advisers. The survey was begun on November 8, 1939, and was terminated on December 15.

A total of 4,761 samples was taken in 432 counties of the 8 States, or an average of 11 samples per county. In most of the area the individual samples consisted of 1/5 square foot of big or little bluestem bunchgrass. In some States, however, complete bunches of the medium were taken and their area measured, and other suitable media, such as broomsedge or timothy, were substituted where necessary. The numbers of bugs per square foot in these samples were determined or estimated as closely as possible by tearing the samples apart and sifting them or by means of a modified Berlese funnel. The populations per square foot of hibernation medium were averaged by counties and these averages, together with figures on acreages of susceptible crops in the respective counties, were used as a basis for making estimates of maximum potential needs for creosote barriers.

A summary of the county population estimates is given by States in the following table.

State ^{1/}	Hibernation medium	Chinch bugs per square foot of hibernation medium--county averages		
		Maximum	Minimum	Mean
		Number	Number	Number
Illinois---	<u>Andropogon furcatus</u> and <u>A. scoparius</u> .	4,252	41	1,072
Indiana---	<u>A. furcatus</u> , <u>A. scoparius</u> , and timothy	1,115	4	160
Iowa-----	<u>A. furcatus</u> and <u>A. scoparius</u>	28,530	30	4,577
Kansas-----	do.	5,640	46	1,196
Missouri---	<u>A. furcatus</u> , <u>A. scoparius</u> , also broomsedge, giant redtop, dropseed and Indian grass.	6,935	4	885
Nebraska---	<u>A. furcatus</u> and <u>A. scoparius</u>	3,883	6	1,586
Ohio-----	Timothy	1,120	6	164
Oklahoma---	<u>A. furcatus</u> and <u>A. scoparius</u>	1,901	129	890

^{1/} Including infested portions only.

The area surveyed is shown on the accompanying map, which also indicates in a general way the density of chinch bug populations in hibernation at the beginning of the 1939-40 winter season. This map is to be regarded as indicating the possible maximum chinch bug menace for 1940. It should be understood, however, that the numbers of chinch bugs now in hibernation may become greatly reduced by unfavorable weather conditions or other natural agencies during the winter, spring, or early summer, before the corn crop of 1940 becomes subjected to chinch bug attack. For this reason supplementary surveys are planned, one in early spring to check up on winter mortality of the hibernating bugs, and one late in May and early in June to determine the abundance of the spring brood in small grains and the probable extent and severity of its migrations to corn.

CHINCH BUG SURVEY DEC. 15 1939.
BUR. OF ENT. & PL. QUAR.



